What is claimed is:

1. A device for optically inspecting and evaluating a sample, the device comprising:

(a) a first illumination source emitting light within a first spectrum;

(b) a second illumination source emitting light within a second spectrum;

(c) a third illumination source emitting light within a third spectrum where the third spectrum is between the first and second spectra;

(d) one or more optical components for combining the light emitted by the first, second and third illumination sources to produce a probe beam output;

(e) one or more optical components for directing the probe beam to be reflected by the sample; and

(f) a detector for analyzing the reflected probe beam.

2. A device as recited in claim 1, where the one or more optical components for combining the light emitted by the first, second and third illumination sources further comprises a fiber bundle having an input end subdivided into respective portions for receiving light from the first, second and third illumination sources.

3. A device as recited in claim 2, wherein each portion of the fiber bundle includes a series of optical fibers and where the optical fibers from each of the separate portions are interleaved within the fiber bundle.

4. A device as recited in claim 1, where the one or more optical components for combining the light emitted by the first, second and third illumination sources further comprises:

separate fiber optic components for receiving light from the first, second and third illumination sources; and

a conical mirror for combining the outputs of the separate fiber optic components.

5. A device as recited in claim 1, wherein the first, second and third illumination sources are light emitting diodes.

6. A device as recited in claim 1, where the first spectrum is within the visible spectrum and the second spectrum is within the ultra-violet spectrum.

7. A device as recited in claim 1, where the first illumination source is a deuterium lamp, the second illumination source is a tungsten lamp and the third illumination source includes one or more light emitting diodes.

8. A method for optically inspecting and evaluating a sample, the method comprising:

(a) using a first illumination source to generate light within a first spectrum;

(b) using a second illumination source to generate light within a second spectrum;

(c) using a third illumination source to generate light within a third spectrum where the third spectrum is between the first and second spectra;

(d) combining the light emitted by the first, second and third illumination sources to produce a probe beam output;

(e) directing the probe beam to be reflected by the sample; and

(f) analyzing the reflected probe beam.

9. A method as recited in claim 8 that further comprises using a fiber bundle to combine the light emitted by the first, second and third illumination sources, where the fiber bundle has an input end subdivided into respective portions for receiving light from the first, second and third illumination sources.

10. A method as recited in claim 9, wherein each portion of the fiber bundle includes a series of optical fibers and where the optical fibers from each of the separate portions are interleaved within the fiber bundle.

11. A method as recited in claim 8 that further comprises:

receiving light from the first, second and third illumination sources using separate fiber optic components; and

combining the outputs of the separate fiber optic components using a conical mirror.

12. A method as recited in claim 8, wherein the first, second and third illumination sources are light emitting diodes.

13. A method as recited in claim 8, where the first spectrum is within the visible spectrum and the second spectrum is within the ultra-violet spectrum.

14. A method as recited in claim 8, where the first illumination source is a deuterium lamp, the second illumination source is a tungsten lamp and the third illumination source includes one or more light emitting diodes.

15. A method for optically inspecting and evaluating a sample, the method comprising:

(a) generating a broadband probe beam that includes ultraviolet and visible components;

(b) supplementing the broadband probe beam using a using one or more light emitting diodes each generating light within the visible spectrum;

(c) directing the supplemented probe beam to be reflected by the sample; and

(d) analyzing the reflected probe beam.

16. A method as recited in claim 15, that further comprises using a fiber bundle to combine the broadband probe beam and the light generated by the light emitting diodes.

17. A method as recited in claim 15, that further comprises: combining the broadband probe beam and the light generated by the light emitting diodes using a conical mirror.

18. A method as recited in claim 15, where the broadband probe beam is generated by combining the outputs of a deuterium lamp and a tungsten lamp.

19. A device for optically inspecting and evaluating a sample, the device comprising:

(a) an illumination source generating a broadband probe beam that includes ultraviolet and visible components;

(b) one or more light emitting diodes each generating light within the visible spectrum;

(c) one or more optical components for combining the broadband probe beam and the light generated by the light emitting diodes;

(d) one or more optical components for directing the probe beam to be reflected by the sample; and

(e) a detector for analyzing the reflected probe beam.

20. A device as recited in claim 19, in which the one or more optical components for combining the broadband probe beam and the light generated by the light emitting diodes further comprises a fiber bundle.

21. A device as recited in claim 19, in which the one or more optical components for combining the broadband probe beam and the light generated by the light emitting diodes further comprises a conical mirror.

22. A method as recited in claim 19, which further comprises a deuterium lamp and a tungsten lamp for generating the broadband probe beam.

23. A device for optically inspecting and evaluating a sample, the device comprising:

a light source for generating a probe beam, said light source include a first lamp having strong emissions in the visible spectrum and second lamp having strong emissions in the ultraviolet spectrum and a laser diode emitting light in the blue visible region of the spectrum;

optical elements for directing the probe beam to reflect off the sample;

a detector for monitoring the reflected probe beam and generating output signals as a function of wavelength; and

a processor for analyzing the sample based on the output signals.